

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH
(MDPH)

IMMUNIZATION PROGRAM



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GOVERNMENT DOCUMENTS
COLLECTION

FEB 04 1993

State of Massachusetts
Department of Public Health

HISTORICAL BACKGROUND

Immunizations are the cornerstone of preventive health care. Few other public health interventions are as cost effective (attachment 1). Massachusetts has a long history of providing vaccines and immunizing its citizens. The tradition began in 1800 with Dr. Waterhouse of Cambridge who gave the first vaccination (smallpox) in the United States. In 1894, the Biologic Laboratories of the MDPH began to manufacture diphtheria antitoxin. Today this laboratory manufactures a large variety of biologic products including: diphtheria, tetanus, pertussis (DPT) vaccine, diphtheria, tetanus (DT and Td) toxoids, immune serum globulin (ISG), and other products. The laboratory is also involved in the development of newer and safer vaccines, e.g., acellular pertussis, and *Haemophilus influenzae* b (Hib) vaccines conjugated to tetanus toxoid. It is one of only two remaining health department based biologic laboratories in the country. The other is located in Michigan.

Massachusetts has always supplied vaccines, both produced and purchased, as they became available. The immunization program expanded during the 1960's when federal funding of state based programs began as part of the National Childhood Vaccine Program (NCVP). This program allowed states to bulk purchase vaccine at a federally discounted rate. It also funded personnel and sponsored immunization initiatives.

The Massachusetts Immunization Program (MIP) has evolved into a multi-component project. Its activities consist of:

- Morbidity
surveillance for cases, outbreak control
- Vaccine Distribution
MDPH produced/purchased
- Surveys
immunization coverage rates, vaccine usage
- Special Projects
Infant Immunization Initiatives, Hepatitis B Prevention Project, Influenza Demonstration Project, and the Immunization Action Plan
- Health Information/Education
- New Vaccine Development
(in conjunction with the Biologic Laboratories)

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TYPES OF VACCINE DELIVERY SYSTEMS

After the initiation of the NCVP, states purchased vaccine at discounted rates. Three different types of programs evolved to distribute these vaccines. States chose to distribute vaccine to:

- public clinics only
- public clinics, medicaid, selective practices
- universal distribution to all providers (public and private)

UNIVERSAL VACCINE DISTRIBUTION IN MASSACHUSETTS

Massachusetts has always been committed to universal vaccine distribution. We are one of only twelve states to distribute vaccine to health care providers in both the public and private sectors. A few of the New England states, which formerly universally provided all vaccines, have recently had to restrict the distribution of some vaccines to the public sector only. The only two states currently providing all of the vaccines recommended by the Advisory Committee on Immunization Practices (ACIP) and the American Academy of Pediatrics (AAP) are Massachusetts and New Hampshire.

In Massachusetts, we have either no or very limited local health department services. However, a unique public-private partnership has been forged in our state to provide a mechanism to obtain adequate amounts of vaccine and to administer it effectively. In 1989, we were able to create a Vaccine Fund which provides revenues for vaccine purchase and is described below. Massachusetts Department of Public Health (MDPH) manufactures those vaccines listed above and purchases the other vaccines (measles, mumps, rubella (MMR) vaccine, oral polio vaccine (OPV), Hib vaccine, hepatitis B vaccine) on the federal contract. Influenza vaccine is purchased via a state contract. We then distribute these vaccines free of charge to all health care providers in the state (attachments 2 and 3). This is done via 6 regional depots and local distribution occurs through local boards of health, visiting nurse associations and hospitals.

In 1992, we distributed over 2.6 million doses of vaccine (attachment 4). Eighty percent of our vaccine is administered in the private sector. The remaining vaccine is administered at public sites such as local boards of health, community health centers, public hospitals and visiting nurse associations. We believe strongly that immunizations are an integral component of primary care, and that all children should have a medical/immunization home. We encourage all free-standing immunization clinics to link immunization services with referral to a primary care provider.

Those providers who participate in our program cannot charge patients for the vaccine. They can charge a small administration fee which must be waived if the patient cannot afford to pay.

We believe that our policy of universal distribution has resulted in a low incidence of vaccine preventable disease morbidity (attachment 5), and very high immunization

coverage rates among our schoolchildren and those two years of age.

In 1992, a retrospective analysis of immunization data collected at the time of kindergarten entry revealed that 65% of our children had completed their basic immunization series, consisting of 4 doses of DTP, 3 doses of polio, and 1 dose of MMR vaccines, by 24 months of age, compared to the U.S. median of 55%. There are only 3 states with higher two year old immunization levels: Rhode Island, Tennessee and New Hampshire.

States that do not have universal immunization programs do not enjoy these high immunization rates and have been the sites of large outbreaks of vaccine preventable diseases. The recent measles epidemic peaked in 1990 when over 27,000 cases and 90 deaths were reported nationally. Most of these cases occurred in states that do not have universal distribution programs (attachment 6). In some of these areas, surveys revealed that only 50% of two year olds were immunized against measles. In Massachusetts, measles immunization levels in two year olds exceed 80%.

While the rest of the nation was experiencing an epidemic, in Massachusetts, we had a two-thirds reduction in cases: only 33 cases were reported in 1990. In 1991 and 1992 only 43 and 22 cases were reported each year. Surveys done in 1992 show that 98% of children entering kindergarten and day care and 84% of children two years of age, as measured retrospectively, are immunized against measles (attachment 7). Ninety-five percent of our college students have received one dose of measles containing vaccine. During 1990, the Vaccine Fund allowed us to universally implement a two dose measles vaccine schedule for children entering seventh grade and college to prevent disease in older children. Eighty-five percent of college students and 92% of children entering seventh grade have received two doses of measles containing vaccine.

A national resurgence in rubella and congenital rubella syndrome (CRS) had also been reported. From 1989 - 1991, over 2900 cases of rubella and 51 cases of CRS were reported nationwide. During that same time period, only 5 cases of rubella and no cases of CRS were reported in Massachusetts.

Recently an advance in child health, which many pediatricians say ranks in importance not far behind polio vaccine, occurred with the approval in Hib vaccine for use in infants. This vaccine will protect infants against invasive Hib disease, which is the most common cause of meningitis in early childhood, and other life-threatening throat, heart, lung and blood infections. In February 1991, Massachusetts became the first state to universally distribute this vaccine. We distributed over 434,000 doses in 1991 and 342,000 doses in 1992. Provision of this vaccine was made possible with revenues from the Vaccine Fund. Infant Hib immunization has significantly contributed to the reduction of infant morbidity and mortality (97 cases in children less than 5 years of age in 1990 vs. 4 cases in that same age group in 1992).

In response to the most recent ACIP recommendations, in February 1992, we began universal distribution of hepatitis B vaccine to all infants regardless of mother's antigen status. The first dose will be given at birth. The MIP has provided a series of educational programs to hospital staff unfamiliar with immunization, as well as

primary care providers and parents. It will cost approximately \$2.3 million for universal infant hepatitis B immunization, which will also be provided with revenues from the Vaccine Fund.

FINANCIAL SUPPORT FOR UNIVERSAL DISTRIBUTION

In 1989, the ability of MDPH to continue to universally provide vaccine was threatened by a combination of factors which included:

- rising costs
- excise tax on MDPH-manufactured vaccines
- new recommendations for additional vaccines e.g., second dose of measles vaccine

The factors increased the cost of providing vaccine statewide from \$3 million (source: 50% state, 50% federal) in 1987 to \$10 million in 1989. In order to meet this need and demonstrate their support for the universal program, the legislature created the Vaccine Fund with dedicated revenues from the "uncompensated care pool." This allows the state to continue to purchase vaccine on the federal contract at the discounted rate and continue the program. In 1991, the legislature passed a bill that permanently established the Vaccine Fund (attachment 8). In January 1992, the fund was transferred to the Health Care Access Fund (Hospital Finance Act). This fund is created from revenues derived from the cigarette tax. It will provide the bulk of the funding (\$10.7 million) for our universal distribution program in 1993. In addition, we have received \$2.5 million in federal funds this year for vaccine purchase. We estimate that it will cost over \$14.5 million dollars this year to provide all vaccines universally in Massachusetts.

SPECIAL INITIATIVES

1. HEPATITIS B PREVENTION PROJECT - The objective of this project is to prevent perinatal transmission of hepatitis B through implementation of the recommendations of the Immunization Practices Advisory Committee (ACIP). These recommendations state that all pregnant women be routinely screened for hepatitis B early in pregnancy, and that their infants and contacts be appropriately immunized.

Hepatitis B is serious but preventable. The most efficient mode of transmission is from an infected mother to her infant. When infants are infected at birth, more than 90% of them will go on to be chronically infected, and more than 25% will experience the long-term complications of cirrhosis and liver cancer.

This program will provide information and education about hepatitis B to health care providers and patients, as well as vaccine to those without reimbursement. Materials will be developed in several languages for distribution among those ethnic groups estimated to be at highest risk.



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https://archive.org/details/massachusettsdep00mass_6

2. NEW VACCINE DEVELOPMENT - The Biologic Laboratories is involved with the development of a new and safer acellular pertussis vaccine. It is also developing a Hib vaccine conjugated to tetanus for use in infants. The MIP will assist in the vaccine trials of these products.

3. IMMUNIZATION ACTION PLAN - In response to a national resurgence of measles and other vaccine-preventable diseases, Congress allocated \$ 46 million to assist states in implementing activities to identify and remove barriers to immunization services. The Massachusetts Immunization Program solicited and received action plans from more than 100 health care providers, community-based organizations and local boards of health from across the state. These plans were compiled by the MIP and a coordinated comprehensive Immunization Action Plan (IAP) was submitted to the Centers for Disease Control in June 1992.

The MIP was awarded \$ 1 million to implement its plan to address issues of service delivery, education and assessment. The first priority has been to rebuild the public health infrastructure by staffing five regional offices with immunization nurses who serve as technical consultants to providers to promote and improve immunization service delivery. The immunization nurses provide education and information to providers and the community, conduct clinic-based immunization audits and augment staffing of immunization clinics when necessary.

The MDPH Bureau of Family and Community Health (BFCH) received IAP funding for a BFCH Immunization Coordinator to liaison with the MIP and to integrate immunization information and education in all BFCH maternal-child health programs. A systems analyst will begin work on the development of a statewide immunization tracking system, starting with the integration of the various BFCH data bases. WIC and Healthy Start immunization specialists will coordinate immunization activities in those programs.

Two demonstration projects will be funded in high-risk areas to conduct immunization outreach, education and assessment, administer vaccines and facilitate entry into primary care for targeted minority communities. The first project to be funded is a community-based organization providing services to the Hispanic community in Holyoke. A second grant will be awarded through the competitive bidding process.

Contracts are also being established with the Massachusetts Nurses Association and the Massachusetts Chapter of the American Academy of Pediatrics to provide immunization education to health care providers. The MIP and the Massachusetts Public Health Association are co-sponsoring regional immunization conferences in the state with support from Merck, Sharp and Dohme.

The Massachusetts IAP is a five year plan to increase immunization levels to meet the Year 2000 goal of complete immunization for 90% of children by their second birthday. It represents a coordinated effort on the part of numerous public and private parties who share the common goal of providing appropriate and accessible health care for all children in Massachusetts.

(February 1993)

SELECTED BENEFIT-COST ANALYSES OF VACCINES

Vaccine	Benefit-Cost Ratio
Measles	10:1 12:1
Mumps	7:1
Rubella	8:1
Combined MMR	14:1
Pertussis	3:1 11:1
Polio	10:1

Plotkin and Mortimer. Vaccines. Philadelphia: WB Saunders Co., 1988.



William F. Weld

Governor

David P. Forsberg

Secretary

David H. Mulligan

Commissioner

The Commonwealth of Massachusetts Attachment 2

Executive Office of Health and Human Services

Department of Public Health

State Laboratory Institute

305 South Street, Boston, MA 02130-3597

617-522-3700, Fax 617-522-8735

VACCINES PROVIDED BY THE MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH IMMUNIZATION PROGRAM

DTP	(diphtheria, tetanus, pertussis)
DT	(diphtheria, tetanus)
Td	(tetanus, diphtheria -- adult type)
OPV	(oral polio vaccine)
MMR ¹	(measles, mumps, rubella)
cHib	(conjugate <i>Haemophilus influenzae</i> b)
Influenza ²	
Hepatitis B ³	

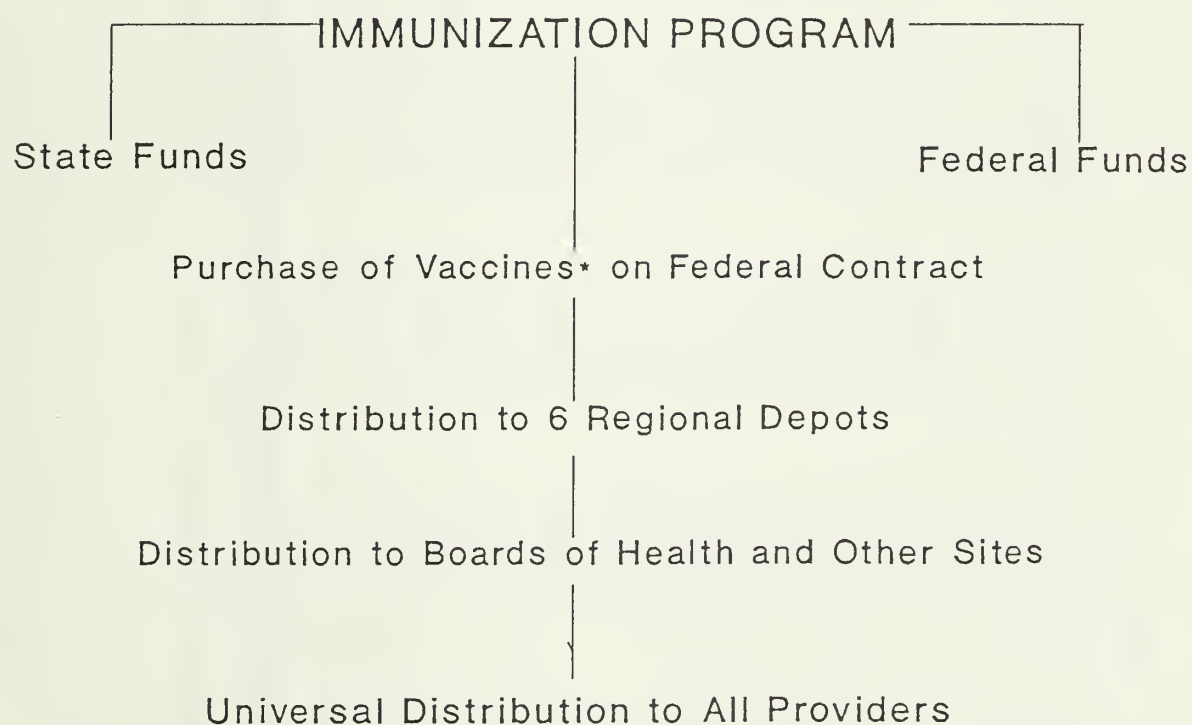
Restrictions are as follow:

- 1 For administration at 15 months, 7th grade or college entry.
- 2 For high risk groups.
- 3 For immunization of infants born after January 1, 1992.

January 1992

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

UNIVERSAL VACCINE DISTRIBUTION



* DTP, DT, Td are manufactured by MDPH

MONTHLY VACCINE DISTRIBUTION

January - December 1992

Month	MMR	Polio	Hib	Hep B	DTP	Td	DT	Influenza
Jan	28,070	38,880	32,760	2,728	41,565	26,770	3,270	0
Feb	19,760	31,050	25,170	37,822	32,705	23,510	2,720	0
Mar	20,590	34,160	27,940	22,288	35,175	22,620	2,750	0
Apr	23,835	38,450	43,580	22,512	41,595	29,320	2,750	0
May	23,360	32,401	28,580	26,654	37,255	25,400	1,960	0
Jun	24,840	38,431	29,938	29,568	42,570	33,310	1,970	0
Jul	24,878	32,990	23,690	25,388	38,975	28,660	2,990	0
Aug	30,700	43,355	26,425	28,508	41,880	32,770	3,990	0
Sep	39,170	44,240	30,430	27,984	42,250	31,310	5,800	261,820
Oct	24,603	30,160	23,235	20,568	31,775	23,730	2,680	178,740
Nov	26,780	35,730	25,230	22,460	40,105	28,170	2,360	9,090
Dec	18,940	32,403	25,895	27,100	35,881	19,520	1,490	350
Total	305,526	432,250	342,873	293,580	461,651	325,090	34,760	450,000

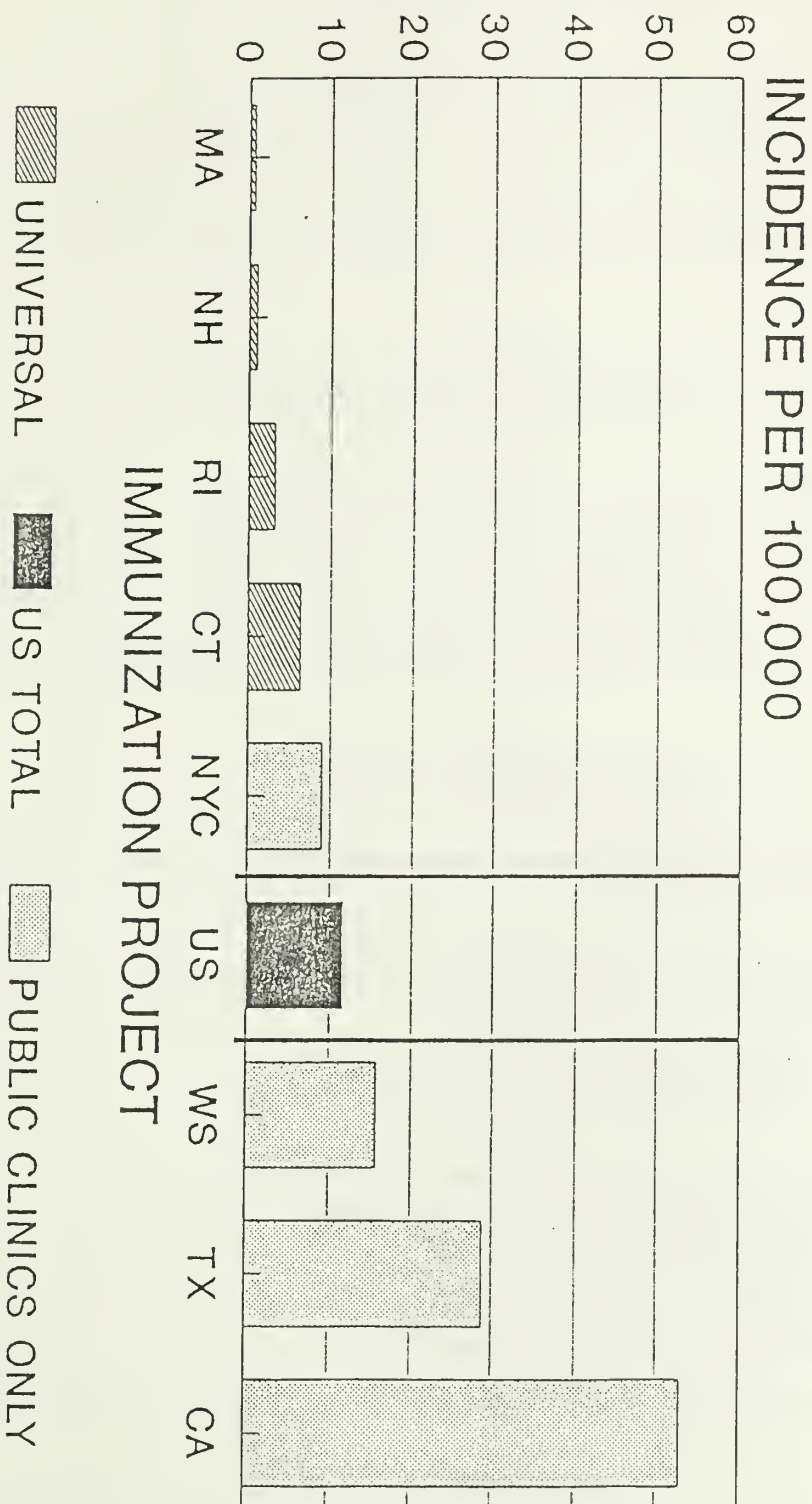
TOTAL DOSES (ALL VACCINES) = 2,645,730

VACCINE PREVENTABLE DISEASES IN MASSACHUSETTS REPORTED CASES 1988-1992

	1988	1989	1990	1991	1992
DISEASE					
Measles	6	109	33	43	22
Mumps	4	57	14	3	3
Rubella	15	1	2	2	0
Pertussis	211	307	367	204	397*
Hib < 5 years	118	92	97	26	4
Tetanus	1	0	1	2	1
Diphtheria	0	0	0	0	0
Polio	1	0	0	0	0

* Provisional Data

MEASLES INCIDENCE IN 1990 COMPARISON BY TYPE OF VACCINE DISTRIBUTION SYSTEM



(Source: CDC)

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH
IMMUNIZATION PROGRAM

Immunization Levels in Massachusetts

Table 1
Immunization Survey of Children
Enrolled in Kindergarten and Attending Day Care
(1991-92)

	DTP ¹	Polio ²	MMR ³
Kindergarten	98%	99%	98%
Day Care	98%	98%	99%

Table 2
Retrospective Immunization Survey of Two Year Old Children
Enrolled in Kindergarten and Attending Day Care
(1991-92)

	DTP	Polio	MMR	Series Complete ⁴
Kindergarten	70%	85%	84%	65%
Day Care	98%	79%	89%	75%

Table 3
Seventh Grade MMR Survey
(1991-92)

One Dose	99%
Two Doses	92%

Table 4
Immunization Survey of College Students
(1991-92)

	MMR(1 dose)	MMR(2 doses)	Td ⁵
Undergraduate	97%	84%	97%
Graduate	87%	77%	87%
Health Science	98%	90%	96%

¹ DTP = Diphtheria, Tetanus, Pertussis Vaccine: ≥ 4 doses

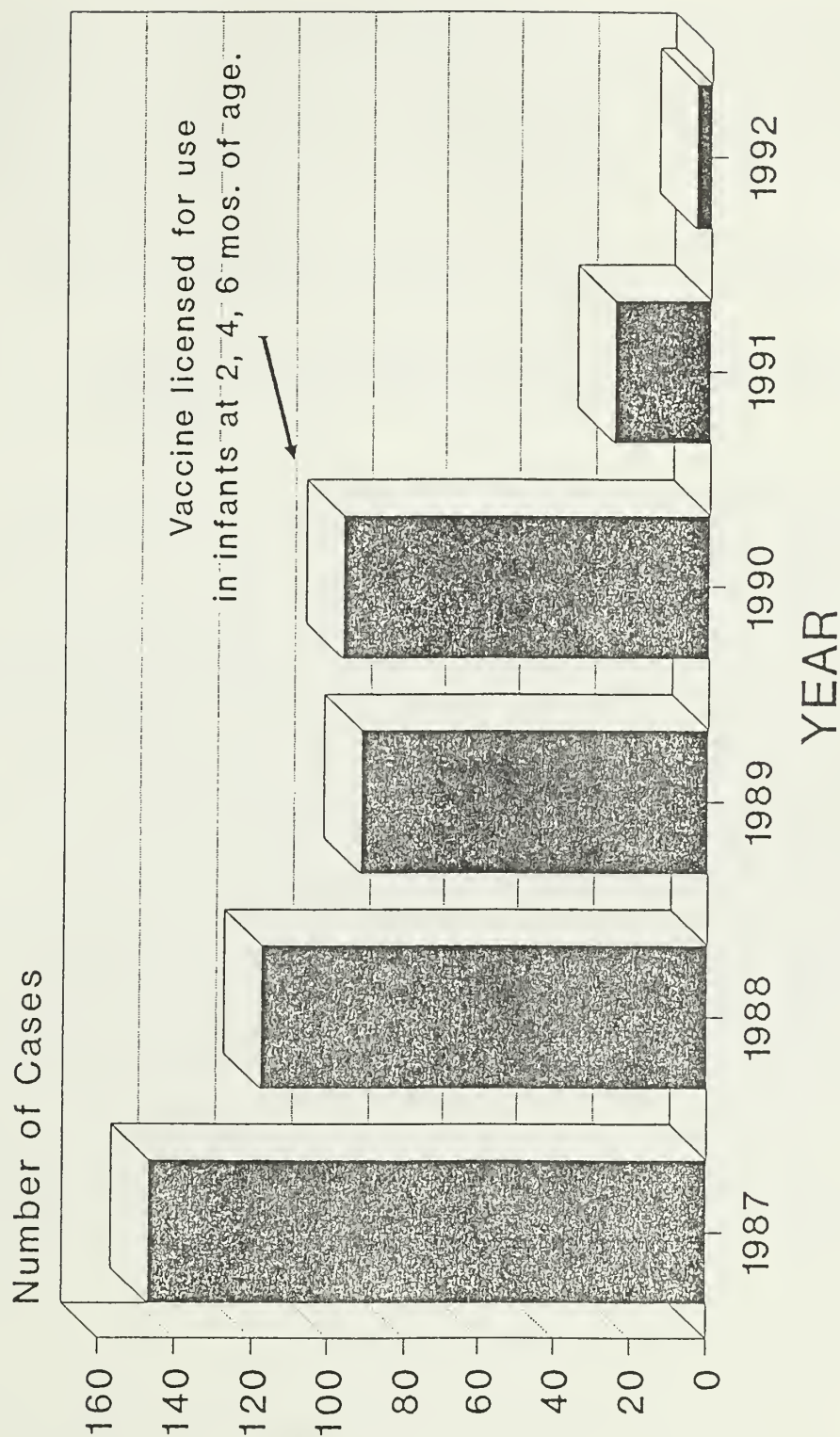
² Polio: ≥ 3 doses

³ MMR = Measles, Mumps, Rubella Vaccine: 1 dose

⁴ 4 DTP, 3 Polio, 1 MMR

⁵ Td = Tetanus, Diphtheria Toxoid

HAEMOPHILUS INFLUENZAE B (HIB) IN CHILDREN < 5 YEARS OF AGE MASSACHUSETTS 1987 - 1992



Vaccine Trust Fund Legislation 1991

HOUSE - No. 5700

SECTION 110. A special commission is hereby established to consist of five members to be appointed by the governor, one of whom shall be the commissioner of the department of public welfare or his designees, one of whom shall be the commissioner of the department of revenue or his designee, one of whom shall be the chief justice of the probate and family court department or his designee, and two of whom shall be attorneys with expertise in conveyancing and probate law.

The purpose of said commission shall be to review and assist in implementing a medical assistance estate lien provided for under section sixteen C of chapter one hundred eighteen E of the General Laws.

Said commission shall submit a report to the joint judiciary committee and the house and senate committees on ways and means of the results of its study before September first, nineteen hundred and ninety-one.

SECTION 111. Notwithstanding the provisions of any general or special law to the contrary, there shall be established upon the books of the commonwealth a separate fund to be known as the Vaccine Trust Fund. Said fund shall consist of monies paid or contributed to the fund from the uncompensated care pool described in subsection (1) of section fifteen of chapter one hundred and eighteen F of the General Laws. The treasurer of the commonwealth is hereby authorized to transfer an amount equal to ten million seven hundred thousand dollars for hospital fiscal year nineteen hundred and ninety-two from the uncompensated care pool to said Vaccine Trust Fund. The revenue received from payments made under this section shall be impressed with a trust on behalf of the beneficiaries of said program and shall be kept in a trust fund separate and apart from all other monies received by the commonwealth. The treasurer of the commonwealth shall be the custodian of the trust fund. The monies in the trust fund shall be invested by the treasurer in accordance with law; provided, however, that the treasurer shall make no investments that prevent the treasurer from making timely payment of disbursements. Interest income and dividends from cash investments shall be credited to the fund. The treasurer shall make payments from the trust fund, without further appropriation, on the submission of a warrant listing all payments to be made, which has been approved in writing by the commissioner of the department of public health or his designee. Said payments shall be only for the purchase or manufacture of vaccines consistent with the current practices of said department. The books and records of the trust fund shall be subject to an annual audit by the auditor of the commonwealth. Said department may expend for the ongoing administrative costs of the Vaccine Trust Fund, up to 5% of said Vaccine Trust Fund, but not to exceed two hundred thousand dollars annually.

